





Procedure-Associated Module: Protocols and Definitions

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Target Audience

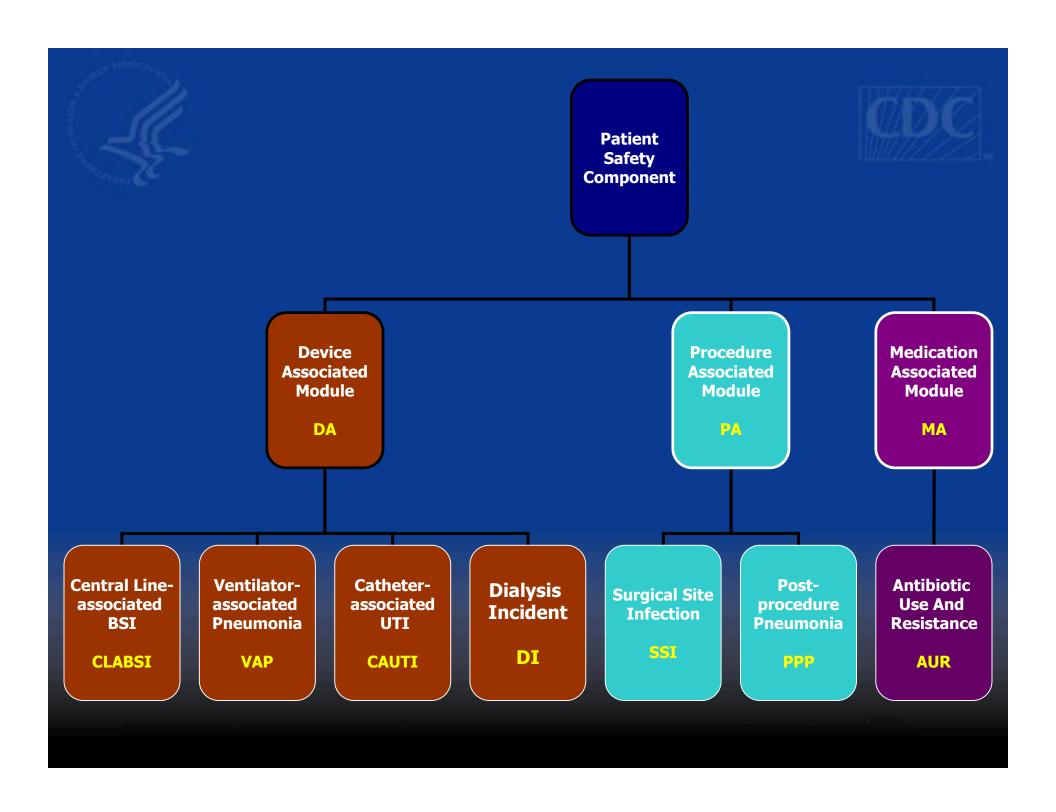
 This training is designed for those who will collect and analyze Patient Safety Component data or enroll a hospital into NHSN

This includes:

- NHSN Facility Administrator
- Patient Safety Primary Contact
- Infection Control Professional (ICP)
- Epidemiologist
- Microbiologist
- Pharmacist
- Data entry staff

Objectives

- Describe the NHSN Procedure-Associated Module
- 2. Review key terms and definitions of infection and data fields used for reporting surgical site infection (SSI) and post-procedure pneumonia (PPP) events
- 3. Define the rates obtained using this module







Procedure-Associated Module

Surgical Site Infections

SSI



- Active
- Patient-based
- Prospective
- Priority-directed
- Risk-adjusted, incidence rates

Procedure-associated Module Protocol

- First, choose which procedures* will be monitored during the month
 - Indicate the procedure category
 - Indicate whether the procedure was performed on inpatients only, or outpatients only, or both in- and outpatients
 - Example: Cholecystectomy procedures (CHOL) for in- and outpatients (BOTH)

*Currently, the only procedures included in the protocol are "NHSN Operative Procedures"

Procedure-associated Module Protocol

- Second, for the procedure(s) selected, choose which events will be monitored
 - Surgical site infections (SSI)
 - Post-procedure pneumonia (PPP)

Monthly Reporting Plan

- When following the Procedure-associated module, enter the procedures and events into the Monthly Reporting Plan
- Remember, the Monthly Reporting Plan informs CDC which modules a facility is following during a given month
- A facility must enter a Plan for every month of the year, even those in which no modules are followed
- A facility may enter data <u>only</u> for months in which Plans are on file

Example Plan for Monitoring Device- and Procedure-associated Events

Device-Associated Module				
Locations	CLA BSI	DI VAP	CAUTI	
2 EAST - HEM/ONC ▼	~		V	
SICU-SURGICAL ICU	V			
NICU3 - LEVEL 3 NICU ▼	V			
OUTDIAL - OUTPATIENT DIALYSIS 🔽				
Add Rows Clear All Rows	Copy from Previous Month			
Procedure-Associated Module				
Procedures	SSI proce		Post- procedure PNEU	
CRAN - Craniotomy	▼ IN-Inpatient ▼ IN-Inpatier		IN - Inpatient 🔻	
CHOL - Gallbladder surgery	■ BOTH	▼ BOTH - In and outpatient ▼		
HPRO - Hip prosthesis	▼ IN-Inp	IN-Inpatient		

NHSN Operative Procedure

- A procedure
 - That is performed on a patient who is an NHSN inpatient or an NHSN outpatient
 - Takes place during an operation where a surgeon makes a skin or mucous membrane incision (including laparoscopic approach) and primarily closes the incision before the patient leaves the operating room
 - Is represented by an NHSN operative procedure code*

^{*} NHSN Patient Safety Component Protocol, Table 11

NHSN Operative Procedures*

 Each NHSN operative procedure category consists of a group of ICD-9-CM codes

Example: CBGB (CABG with chest and donor site incisions) = ICD-9 codes 36.10 - 36.14, 36.19

When monitoring a specific NHSN operative procedure category, <u>all</u> the ICD-9 codes within that category that are done in your facility must be followed

^{*} NHSN Patient Safety Component Protocol, Table 11

NHSN Inpatient

 A patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days



 A patient whose date of admission to the healthcare facility and date of discharge are the <u>same</u> calendar day



- A patient care area that meets the American Institute of Architects (AIA) criteria for an operating room
- May include an operating room, csection room, interventional radiology room, or cardiac cath lab

Sources of Data for Finding SSI

- Microbiology reports
- Infection control rounds on nursing units
- Pharmacy reports for antimicrobial use
- Temperature chart
- Operating room report of surgeries
- Use post-discharge surveillance methods for SSI

Sources for Finding SSI -- Postdischarge Surveillance

- Readmission to hospital
- Emergency Department or Clinic records
- Health care system/HMO may have pharmacy records for antimicrobial agents
- Surgeon surveys phone or mail
- Patient surveys less reliable

Superficial Incisional SSI

Infection occurs within 30 days after the operative procedure and

involves only skin and subcutaneous tissue of the incision and

patient has at least one of the following:

- purulent drainage from the superficial incision.
- organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- at least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon, and is culture-positive or not cultured. A culture-negative finding does not meet this criterion.
- diagnosis of superficial incisional SSI by the surgeon or attending physician.

Deep Incisional SSI

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure

and

involves deep soft tissues (e.g., fascial and muscle layers) of the incision and

patient has at least one of the following:

- purulent drainage from the deep incision but not from the organ/space component of the surgical site
- deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least one of the following signs or symptoms: fever (>38°C), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of a deep incisional SSI by a surgeon or attending physician.

Definitions

- Superficial Incisional Primary (SIP) a superficial incisional SSI that is identified in the primary incision in the patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
- Deep Incisional Primary (DIP) a deep incisional SSI that is identified in a primary incision in the patient that has had an operation with one or more incisions

Definitions

- Superficial Incisional Secondary (SIS) a superficial incisional SSI that is identified in the secondary incision in the patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)
- Deep Incisional Secondary (DIS) a deep incisional SSI that is identified in the secondary incision in the patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

Organ /Space SSI

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure

and

infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure

and

patient has at least one of the following:

- purulent drainage from a drain that is placed through a stab wound into the organ/space
- organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of an organ/space SSI by a surgeon or attending physician.

Organ/Space SSI

- Specific sites are assigned to organ/space SSI to further identify the location of the infection
- Example: Report appendectomy with subsequent subdiaphragmatic abscess as an organ/space SSI at the intraabdominal specific site (SSI-IAB)

Specific Sites of an Organ/Space SSI

BONE	Osteomyelitis	JNT	Joint or bursa	
BRST	Breast abscess or mastitis	LUNG	Other infections of the respiratory tract	
CARD	Myocarditis or pericarditis	MED Mediastinitis		
DISC	Disc space	ORAL	Oral cavity	
EAR	Ear, mastoid	OREP	Other reproductive tract	
EMET	Endometritis	OUTI	Other urinary tract	
ENDO	Endocarditis	SA	Spinal abscess without meningitis	
EYE	Eye, other than conjunctivitis	SINU	Sinusitis	
GIT	GI tract	UR	Upper respiratory tract	
IAB	Intraabdominal, NOS	VASC	Arterial or venous	
IC	Intracranial, brain abscess or dura	VCUF	Vaginal cuff	

SSI Numerator Data

- Use Surgical Site Infection (SSI) form for each SSI that is identified during the month
- Indicate the specific site of the SSI
 - SIP
 - DIP
 - SIS
 - DIS
 - Organ/Space

Example of Completed SSI Form



Surgical Site Infection (SSI) Form

OMB No. 0920-0666 Exp. Date: 02-29-2008

*required for saving **required for completion *Event #:007 *Facility ID#10000 Social Security #: *Patient ID#:210011 Secondary ID#: Patient Name, Last: Jones First:John Middle: M *Gender: F *Date of Birth: 04/12/1961 *Date of Event:01/23/2006 *Event Type: SSI *Date of Procedure: 01/18/2006 *NHSN Procedure Code: CRAN ICD-9-CM Code: 07.61 *Date Admitted to Facility: 01/18/2006 *Location: NCCU Event Details *Specific Event: Superficial Incisional Primary (SIP) Superficial Incisional Secondary (SIS) Deep Incisional Secondary (DIP) Deep Incisional Secondary (DIS) X Organ / Space: MEN specify *Detected: X A P R *Secondary Bloodstream Infection: Yes No SSI Contributed to Death: **Died: Yes No *Dathogene Identified.

Pathogen Data

- List up to 3 pathogens for each SSI identified (in rank order of importance)
- For each pathogen, complete information about antimicrobial susceptibilities
- Only certain bug/drug combinations are required, but up to 20 drugs can be listed with susceptibilities

Example of Completed SSI Pathogen

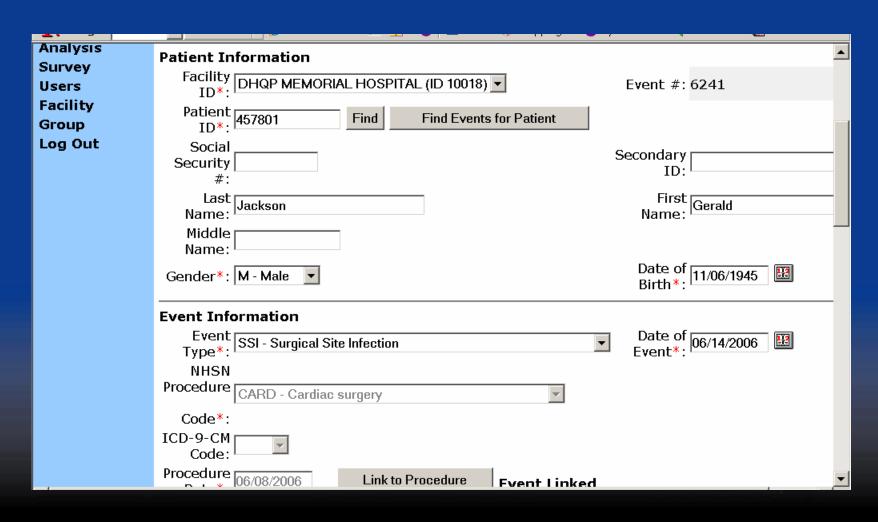


Surgical Site Infection (SSI) Form

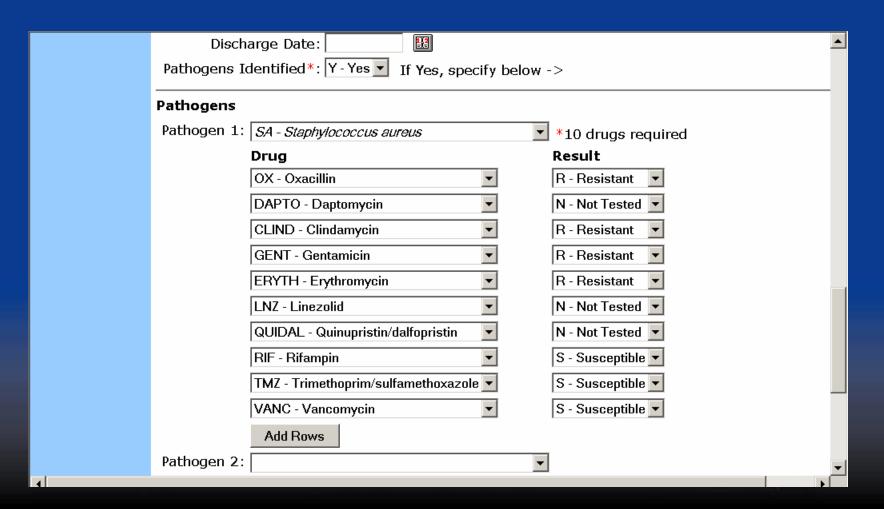
Ent. Date: 02-29-2008 Page 2 of 2

Pathocen # Gram-positive Organisms Coagulase-negative VANC staphylococci SIRN AMP DAPTO 1.847 PENG VANC Enterococcus SIRM SIRN SIRN faecalis: SIRN SIRM AMP DAPTO LNZ PENG VANC Enterococcus OUIDAL SIRN SIRN SIRN SIRN SIRN SIRN faecium Staphylococcus CLIND ERYTH GENT OUTDAL RIF YANC: S(R) SIKN SIRN STRN SIKN SKRN SIKN SIKN aureus Pathogen # Gram-neoative Organisms Acinetobacter spp. AMK AMPSUL CEFEP CEFTAZ CIPRO MERO PIPTAZ LEVO (specify) SIRNSIRN SIRNSIRN SIRN SIRNSIRN SIRNSIRN CEFEP CEFOT CEFTAZ CEFTRX CIPRO IMI Escherichia coli AMK LEVO MERO Enterobacter spp. AMK. CEFEP CEFOT CEFTAZ CEFTRX CIPRO IMI MERO (apacify): CEFEP CEFOT CEFTAZ CEFTRX CIPRO IMI Klebsiella oxytoca AMK. LEMO MERO

Example of an SSI Data Entry Screen



Example of an SSI Data Entry Screen



Sources of Data for Denominators for Procedures

 Operating room record review patient medical record

OR logs

ICD-9-CM procedure codes

SSI Denominator Data

- Complete a Denominator for Procedure form for each procedure that is selected for surveillance
 - Example: If you are monitoring APPY, complete a Denominator for Procedure form for every patient that has an appendectomy during the month

SSI Denominator Data

- Some operative procedures have more than one incision
 - Example: CBGB in which an incision to harvest a donor vessel is made that is separate from the primary incision
- Record these procedures only one time –
 there is no separate procedure code for the donor harvest site

Duration

- Record the hours and minutes between the skin incision and skin closure
- Do not record anesthesia time
- If the patient goes to the OR more than once during the same admission and another procedure is performed through the same incision within 24 hours of the original incision, report the combined duration of operation for both procedures

Wound Classification

Clean (I)

Uninfected wound, no inflammation;
 respiratory, alimentary, genital, or uninfected urinary tracts not entered; primarily closed;
 closed drainage, if needed

Clean contaminated (II)

 Respiratory, alimentary, genital, or urinary tracts entered under controlled conditions and without unusual contamination; include operations on biliary tract, appendix, vagina, oropharynx

Wound Classification

Contaminated (III)

 Open, fresh, accidental wounds; major breaks in sterile technique or gross spillage from GI tract; includes incisions into acute, nonpurulent inflamed tissues

Dirty / Infected (IV)

 Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera

ASA* Class

- 1 = Normally healthy patient
- 2 = Patient with mild systemic disease
- 3 = Patient with severe systemic disease that is not incapacitating
- **4** = Patient with an incapacitating systemic disease that is a constant threat to life
- **5** = Moribund patient not expected to survive for 24 hours with or without operation

*American Society of Anesthesiologists



- If the entire operative procedure was performed using an endoscope/laparoscope, select "Yes"
- Otherwise select "No"
- For CBGB, if the donor vessel was harvested using a laparoscope, select "Yes"

Multiple Procedures

- If more than one NHSN procedure included in the Monthly Plan is done through the same incision, a Denominator for Procedure record is entered for each procedure
 - Example: For the patient who has both CBGB and a CARD procedure done, a Denominator for Procedure record is completed and entered for each procedure
 - ASA score, wound class, and duration of procedure will be the same for each procedure
 - Record "yes" in the Multiple Procedures field for each

Implant

- A nonhuman-derived implantable foreign body (e.g., prosthetic heart valve, hip prosthesis) that is permanently placed in a patient during an NHSN operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes
- Screws, wires, and mesh that are left in place are considered implants

More ...

- Emergency
 - Nonelective, unscheduled operative procedure
- Trauma
 - Operative procedure performed because of blunt or penetrating injury to patient
- General anesthesia
 - Administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain-free, amnesic, unconscious, and often paralyzed with relaxed muscles



- Optional field
- Select the code of the surgeon who performed the principal operative procedure

Example of Completed Denominator for Procedure Form

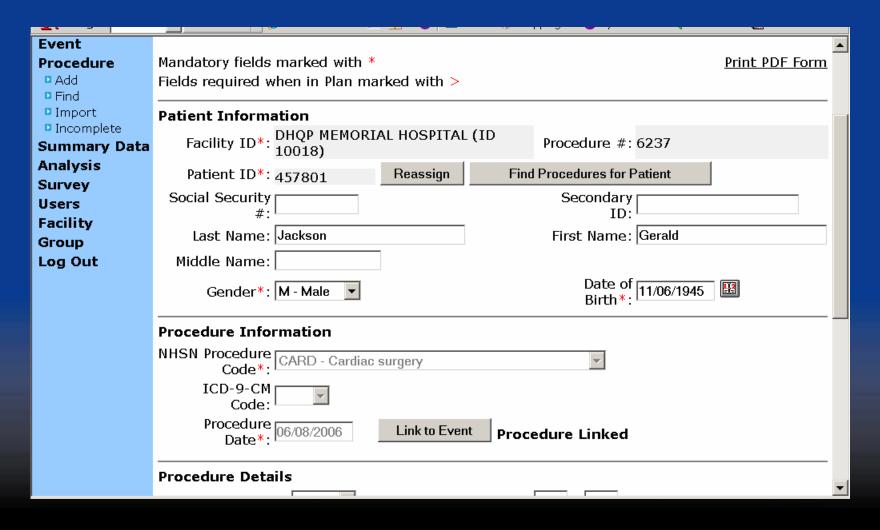


Denominator for Procedure

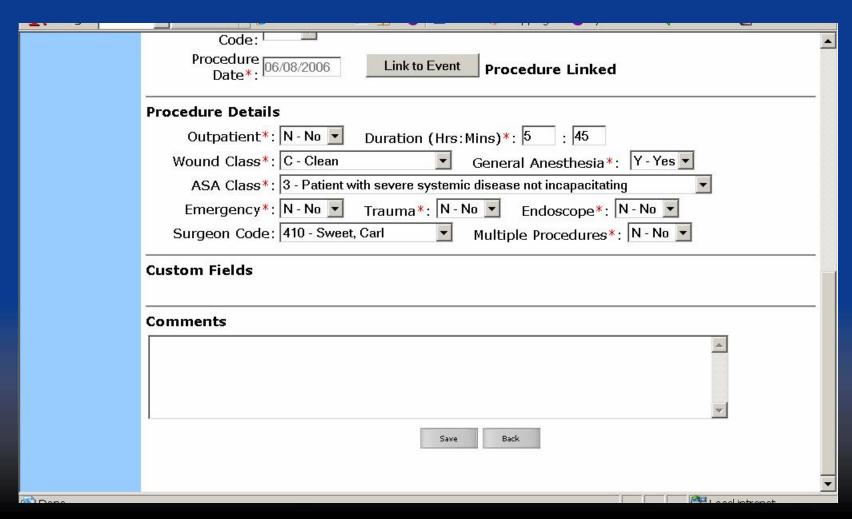
OMB No. 0920-06 Exp. Date: 02-29-20

* required for saving *Procedure #: 144 *Facility ID#:10000 Social Security #: *Patient ID#: 695531 Secondary ID#: Patient Name, Last: Smith First: Jane Middle: *Gender: (F) *Date of Birth: 11/07/1951 *Date of Procedure: 01/14/2006 Event Type: PROC *NHSN Procedure Code: HPRO ICD-9-CM Code: Procedure Details *Outpatient: *Duration: 2 Hours Minutes *Wound Class: C *General Anesthesia: No *ASA Class: 1 *Emergency: Yes *Trauma: Yes *Endoscope: *Multiple Procedures: Yes No Surgeon Code: G24

Example of a Procedure Data Entry Screen



Example of a ProcedureData Entry Screen



SSI Rate

```
SSI during specified time*

Rate = # SSI in patients

during specified time*

# operations during

specified time
```

- * Stratify by:
 - Type of NHSN operative procedure
 - NNIS basic or modified risk index

NNIS Basic Risk Index

 For each patient that has a specific NHSN procedure, assign a risk index based on the following

Operation > duration cut point	1 point
Wound class III or IV	1 point
ASA score ≥ 3	1 point

Example of Assigning Risk Index Categories

Elements	Pt #1	Pt #2	Pt #3
Operation > duration cut point	Υ	N	Υ
Wound class	IV	I	=
ASA score	4	1	1
NHSN Risk Index category	3	0	1

SSI Rates* by Operation and Risk Index Category, NNIS Surgical Patient Component, 1/92-6/04

		Risk Index			
	Duration Cut Point	0	1	2	3
Abdominal hysterectomy	2 hr	1.4	2.3	5.7	**
Knee arthroplasty	2 hr	0.9	1.3	2.3	**
Exploratory laparotomy	2 hr	1.7	3.1	4.8	7.2
CBGB – Chest & donor site	5 hr	1.2	3.4	5.4	9.8
Cesarean section	1 hr	2.7	4.1	7.5	**

NNIS Report 2004; AJIC 32:470-85.





Procedure- Associated Module

Post-Procedure Pneumonia

PPP

PPP Numerator Data

- Hospital-associated pneumonia that occurs in a post-operative inpatient
- Using the Pneumonia form, indicate the type and date of operative procedure
- Indicate the specific type of pneumonia
 - PNU1 Clinically defined pneumonia
 - PNU2 Pneumonia with common bacterial pathogens
 - PNU3 -Pneumonia in immunocompromised patients

PPP Numerator Data

- Indicate presence or absence of ventilator, secondary BSI, death
- Do not conduct post-discharge surveillance, report those detected only during initial hospitalization
- Do not report PPP following outpatient operative procedures

Pathogen Data

- List up to 3 pathogens for each PPP identified (in rank order of importance)
- For each pathogen, complete information about antimicrobial susceptibilities
- Only certain bug/drug combinations are required but up to 20 drugs can be listed with susceptibilities

Example of Completed PNEU Form



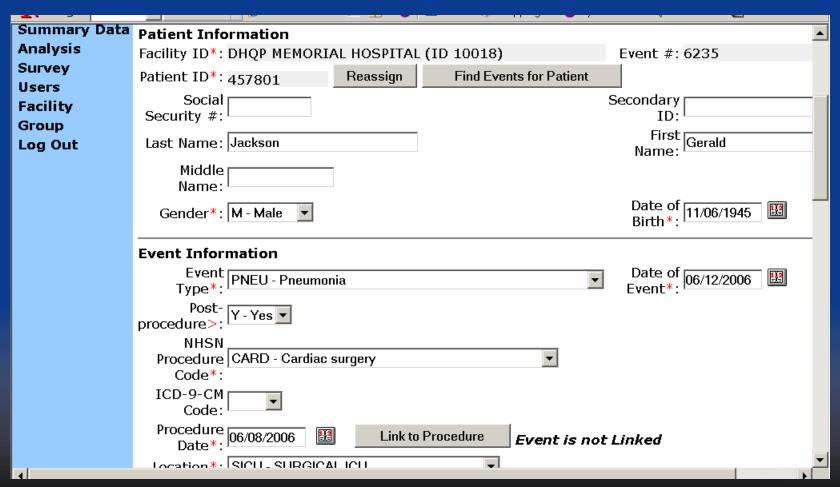
Pneumonia (PNEU) Form

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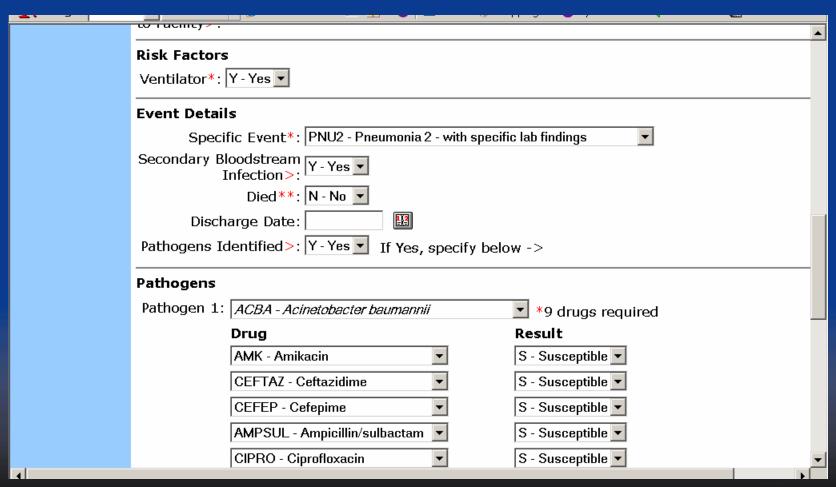
OMB No. 0920-0666 Exp. Date: 02-29-2008

* required for saving **required for completion *Facility ID#: 10060	*Event #: 141
*Patient ID#: 22655	Social Security #:
Secondary ID#:	
Patient Name, Last: Jones	First: Middle: John
*Gender: F (M)	*Date of Birth: 02/26/1955
*Event Type: PNEU	*Date of Event: 01/08/2006
*Post-procedure PNEU: Yes No	Date of Procedure: 01/04/2006
NHSN Procedure Code: CARD	ICD-9-CM Procedure Code:
*Location: SICU	*Date Admitted to Facility: 01/04/2006
Risk Factors	
*For NICU only: Birth weight:	_grams
Event Details	
*CE	
*Specific Event: Clinically defined pneumonia (I Pneumonia with specific labora Pneumonia in immunocompror *Secondary Bloodstream Infection: Yes No	atory findings (PNU2) mised patients (PNU3)
Clinically defined pneumonia (I X Pneumonia with specific labora Pneumonia in immunocompror	atory findings (PNU2) mised patients (PNU3)

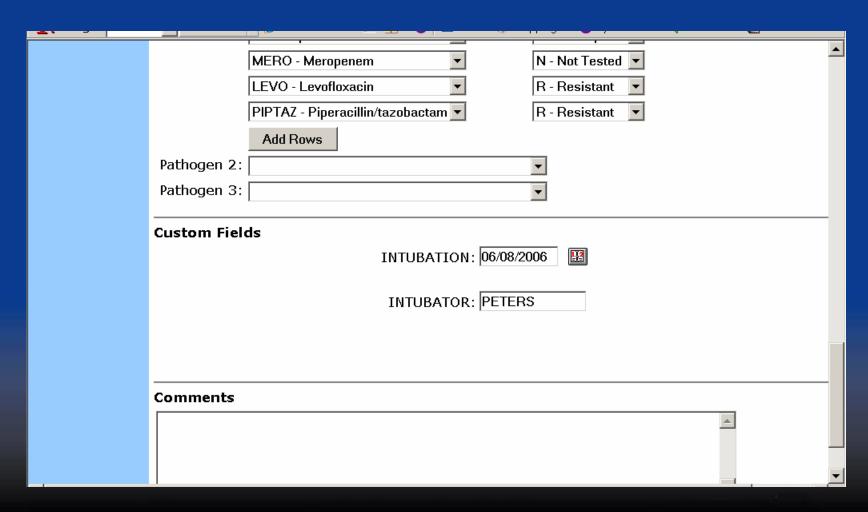
Example of a PPP Data Entry Screen



Example of a PPP Data Entry Screen



Example of a PPP Data Entry Screen



PPP Rate

* Stratify by type of NHSN operative procedure

References

- For more information about these topics, refer to the NHSN website
 - NHSN Manual: Patient Safety Component Protocol located at http://www.cdc.gov/ncidod/dhqp/nhsn_members.html
 - Tables of instruction for completing all forms
 - Key terms
 - Operative procedure codes
 - NHSN data collection forms



http://www.cdc.gov/ncidod/dhqp/nhsn_members.html